1: P29473. Reports Nitric-oxide synt...[gi:266647]

BLink, Conserved Domains, Links

Comment Features Sequence

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LOCUS       P29473                 1205 aa            linear   MAM 20-FEB-2007
DEFINITION  Nitric-oxide synthase, endothelial (EC-NOS) (NOS type III) (NOSIII)
            (Endothelial NOS) (eNOS) (Constitutive NOS) (cNOS).
ACCESSION   P29473
VERSION     P29473  GI:266647
DBSOURCE    swissprot: locus NOS3_BOVIN, accession P29473;
            class: standard.
            created: Apr 1, 1993.
            sequence updated: Jan 23, 2007.
            annotation updated: Feb 20, 2007.
            xrefs: M99057.1, AAA30667.1, M89952.1, AAA30494.1, M95674.1,
            AAA30669.1, A38943, 1D0CA, 1D0CB, 1D0OA, 1D0OB, 1D1VA, 1D1VB,
            1D1WA, 1D1WB, 1D1XA, 1D1XB, 1D1YA, 1D1YB, 1DM6A, 1DM6B, 1DM7A,
            1DM7B, 1DM8A, 1DM8B, 1DMIA, 1DMIB, 1DMJA, 1DMJB, 1DMKA, 1DMKB,
            1ED4A, 1ED4B, 1ED5A, 1ED5B, 1ED6A, 1ED6B, 1FOIA, 1FOIB, 1FOJA,
            1FOJB, 1FOLA, 1FOLB, 1FOOA, 1FOOB, 1FOPA, 1FOPB, 1I83A, 1I83B,
            1NSEA, 1NSEB, 1P6LA, 1P6LB, 1P6MA, 1P6MB, 1P6NA, 1P6NB, 1Q2OA,
            1Q2OB, 1RS8A, 1RS8B, 1RS9A, 1RS9B, 1ZZSA, 1ZZSB, 1ZZTA, 1ZZTB,
            2NSEA, 2NSEB, 3NSEA, 3NSEB, 4NSEA, 4NSEB, 5NSEA, 5NSEB, 6NSEA,
            6NSEB, 7NSEA, 7NSEB, 8NSEA, 8NSEB, 9NSEA, 9NSEB
            xrefs (non-sequence databases): UniGene:Bt.4662, KEGG:bta:287024,
            LinkHub:P29473, InterPro:IPR003097, InterPro:IPR001094,
            InterPro:IPR008254, InterPro:IPR001709, InterPro:IPR004030,
            InterPro:IPR012144, InterPro:IPR001433, Pfam:PF00667, Pfam:PF00258,
            Pfam:PF00175, Pfam:PF02898, PIRSF:PIRSF000333, PRINTS:PR00369,
            PRINTS:PR00371, PROSITE:PS50902, PROSITE:PS60001
KEYWORDS    3D-structure; Blood coagulation; Calcium; Calmodulin-binding; FAD;
            FMN; Heme; Iron; Lipoprotein; Metal-binding; Myristate; NADP;
            Oxidoreductase; Palmitate; Phosphorylation; Zinc.
SOURCE      Bos taurus (cattle)
  ORGANISM  Bos taurus
            Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
            Mammalia; Eutheria; Laurasiatheria; Cetartiodactyla; Ruminantia;
            Pecora; Bovidae; Bovinae; Bos.
REFERENCE   1  (residues 1 to 1205)
  AUTHORS   Lamas,S., Marsden,P.A., Li,G.K., Tempst,P. and Michel,T.
  TITLE     Endothelial nitric oxide synthase: molecular cloning and
            characterization of a distinct constitutive enzyme isoform
  JOURNAL   Proc. Natl. Acad. Sci. U.S.A. 89 (14), 6348-6352 (1992)
   PUBMED   1378626
  REMARK    NUCLEOTIDE SEQUENCE [MRNA].
REFERENCE   2  (residues 1 to 1205)
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AUTHORS Nishida,K., Harrison,D.G., Navas,J.P., Fisher,A.A., Dockery,S.P., Uematsu,M., Nerem,R.M., Alexander,R.W. and Murphy,T.J.
TITLE Molecular cloning and characterization of the constitutive bovine aortic endothelial cell nitric oxide synthase
JOURNAL J. Clin. Invest. 90 (5), 2092-2096 (1992)
PUBMED 1385480
REMARK NUCLEOTIDE SEQUENCE [MRNA].
REFERENCE 3 (residues 1 to 1205)
AUTHORS Sessa,W.C., Harrison,J.K., Barber,C.M., Zeng,D., Durieux,M.E., D'Angelo,D.D., Lynch,K.R. and Peach,M.J.
TITLE Molecular cloning and expression of a cDNA encoding endothelial cell nitric oxide synthase
JOURNAL J. Biol. Chem. 267 (22), 15274-15276 (1992)
PUBMED 1379225
REMARK NUCLEOTIDE SEQUENCE [MRNA].
TISSUE=Aortic endothelium
REFERENCE 4 (residues 1 to 1205)
AUTHORS Busconi,L. and Michel,T.
TITLE Endothelial nitric oxide synthase. N-terminal myristoylation determines subcellular localization
JOURNAL J. Biol. Chem. 268 (12), 8410-8413 (1993)
PUBMED 7682550
REMARK MYRISTOYLATION AT GLY-2.
REFERENCE 5 (residues 1 to 1205)
AUTHORS Robinson,L.J. and Michel,T.
TITLE Mutagenesis of palmitoylation sites in endothelial nitric oxide synthase identifies a novel motif for dual acylation and subcellular targeting
JOURNAL Proc. Natl. Acad. Sci. U.S.A. 92 (25), 11776-11780 (1995)
PUBMED 8524847
REMARK PALMITOYLATION AT CYS-15 AND CYS-26.
REFERENCE 6 (residues 1 to 1205)
AUTHORS Boo,Y.C., Hwang,J., Sykes,M., Michell,B.J., Kemp,B.E., Lum,H. and Jo,H.
TITLE Shear stress stimulates phosphorylation of eNOS at Ser(635) by a protein kinase A-dependent mechanism
JOURNAL Am. J. Physiol. 283, H1819-H1828 (2002)
PUBMED 12384459
REMARK PHOSPHORYLATION AT THR-497; SER-635 AND SER-1179.
REFERENCE 7 (residues 1 to 1205)
AUTHORS Raman,C.S., Li,H., Martasek,P., Kral,V., Masters,B.S. and Poulos,T.L.
TITLE Crystal structure of constitutive endothelial nitric oxide synthase: a paradigm for pterin function involving a novel metal center
JOURNAL Cell 95 (7), 939-950 (1998)
PUBMED 9875848
REMARK X-RAY CRYSTALLOGRAPHY (1.9 ANGSTROMS) OF 67-482.
REFERENCE 8 (residues 1 to 1205)
AUTHORS Li,H., Raman,C.S., Martasek,P., Kral,V., Masters,B.S. and Poulos,T.L.
TITLE Mapping the active site polarity in structures of endothelial nitric oxide synthase heme domain complexed with isothioureas
JOURNAL J. Inorg. Biochem. 81 (3), 133-139 (2000)
PUBMED 11051558
REMARK X-RAY CRYSTALLOGRAPHY (1.86 ANGSTROMS) OF 67-482.
REFERENCE 9 (residues 1 to 1205)
AUTHORS Li,H., Raman,C.S., Martasek,P., Masters,B.S. and Poulos,T.L.
TITLE Crystallographic studies on endothelial nitric oxide synthase complexed with nitric oxide and mechanism-based inhibitors

JOURNAL Biochemistry 40 (18), 5399-5406 (2001)
PUBMED 11331003
REMARK X-RAY CRYSTALLOGRAPHY (1.93 ANGSTROMS).
REFERENCE 10 (residues 1 to 1205)
AUTHORS Raman,C.S., Li,H., Martasek,P., Southan,G., Masters,B.S. and Poulos,T.L.
TITLE Crystal structure of nitric oxide synthase bound to nitro indazole reveals a novel inactivation mechanism
JOURNAL Biochemistry 40 (45), 13448-13455 (2001)
PUBMED 11695891
REMARK X-RAY CRYSTALLOGRAPHY (1.65 ANGSTROMS).
REFERENCE 11 (residues 1 to 1205)
AUTHORS Raman,C.S., Li,H., Martasek,P., Babu,B.R., Griffith,O.W., Masters,B.S. and Poulos,T.L.
TITLE Implications for isoform-selective inhibitor design derived from the binding mode of bulky isothioureas to the heme domain of endothelial nitric-oxide synthase
JOURNAL J. Biol. Chem. 276 (28), 26486-26491 (2001)
PUBMED 11331290
REMARK X-RAY CRYSTALLOGRAPHY (1.93 ANGSTROMS).
REFERENCE 12 (residues 1 to 1205)
AUTHORS Kotsonis,P., Frohlich,L.G., Raman,C.S., Li,H., Berg,M., Gerwig,R., Groehn,V., Kang,Y., Al-Masoudi,N., Taghavi-Moghadam,S., Mohr,D., Munch,U., Schnabel,J., Martasek,P., Masters,B.S., Strobel,H., Poulos,T., Matter,H., Pfleiderer,W. and Schmidt,H.H.
TITLE Structural basis for pterin antagonism in nitric-oxide synthase. Development of novel 4-oxo-pteridine antagonists of (6R)-5,6,7,8-tetrahydrobiopterin
JOURNAL J. Biol. Chem. 276 (52), 49133-49141 (2001)
PUBMED 11590164
REMARK X-RAY CRYSTALLOGRAPHY (2.35 ANGSTROMS).
COMMENT On Mar 15, 2005 this sequence version replaced gi:1083055.
[FUNCTION] Produces nitric oxide (NO) which is implicated in vascular smooth muscle relaxation through a cGMP-mediated signal transduction pathway. No mediates vascular endothelial growth factor (VEGF)-induced angiogenesis in coronary vessels and promotes blood clotting through the activation of platelets.
[CATALYTIC ACTIVITY] L-arginine + n NADPH + m O(2) = citrulline + nitric oxide + n NADP(+).
[COFACTOR] Heme group.
[COFACTOR] Binds 1 FAD.
[COFACTOR] Binds 1 FMN.
[COFACTOR] Metrahydrobiopterin (BH4). May stabilize the dimeric form of the enzyme.
[ENZYME REGULATION] Stimulated by calcium/calmodulin.
[SUBUNIT] Homodimer.
[SIMILARITY] Belongs to the NOS family.
[SIMILARITY] Contains 1 flavodoxin-like domain.

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      541 grlfrkafdp rvlcmdeydv vslehealvl vvtstfgngd ppengesfaa almemsgpyn
      601 ssprpeqhks ykirfnsvsc sdplvsswrr krkessntds agalgtlrfc vfglgsrayp
      661 hfcafaravd trleelgger llqlgqgdel cgqeeafrgw akaafqasce tfcvgeeaka
      721 aaqdifspkr swkrqryrls tqaeglqllp glihvhrrkm fqatvlsven lqsskstrat
      781 ilvrldtagq eglqyqpgdh igicppnrpg lveallsrve dpppptesva veqlekgspg
      841 gpppswvrdp rlppctlrqa ltfflditsp psprllrlls tlaeepseqq eletlsqdpr
      901 ryeewkwfrc ptllevleqf psvalpapll ltqlpllqpr yysvssapna hpgevhltva
      961 vlayrtqdgl gplhygvcst wlsqlktgdp vpcfirgaps frlppdpyvp cilvgpgtgi
     1021 apfrgfwqer lhdieskglq papmtlvfgc rcsqldhlyr devqdaqerg vfgrvltafs
     1081 repdspktyv qdilrtelaa evhrvlcler ghmfvcgdvt matsvlqtvq rilategdme
     1141 ldeagdvigv lrdqqryhed ifgltlrtqe vtsrirtqsf slqerhlrga vpwafdppgp
     1201 dtpgp
//
```